Editorial

Addressing the challenges of implementing precision medicine in respiratory diseases

(J Precis Respir Med 8:1–2, 2025; doi: 10.2500/jprm.2025.8.250001)

This issue of the *Journal of Precision Respiratory Medicine* includes topics that range from severe asthma to cystic fibrosis (CF), bronchiectasis, drug-induced pulmonary toxicity, and positive pressure mechanical ventilation safety. Therapeutic options for managing severe asthma continue to advance the frontier of precision respiratory medicine. Available biologic choices include benralizumab, dupilumab, mepolizumab, omalizumab, reslizumab, and tezepelumab. The selection of which biologic to use for a particular patient with severe asthma can be complex, involving an analysis of biomarkers and various clinical characteristics. Nair and Katial[1] performed an extensive PubMed search to determine the current evidence for selecting one biologic over another. In this issue, these authors review the nuances of using biomarkers in medical decision-making for precise biologic selection and subsequent monitoring. They conclude that biomarkers have a role in managing and stratifying asthma.

The future of CF management also lies in precision medicine as Hoag and Chan[2] outline in this issue. Since the discovery and sequencing of the CF transmembrane conductance regulator gene in 1989, the focus of treatment has shifted to the development of therapeutics that restore the function of mutated channels and, thus, treat the underlying cause of CF. In this issue, Hoag and Chan[2] review the clinical symptoms of CF, diagnostic strategies, currently approved treatments, and future targets of precision medicine to restore CF transmembrane conductance regulator function.

CF is one of many airway diseases that can lead to bronchiectasis and difficulties in airway clearance. Impaired mucociliary clearance in bronchiectasis leads to inflammation and chronic infection, which further perpetuate lung destruction in a vicious vortex pattern. Various techniques, including airway clearance techniques, muco-active agents, and exercise, may help mobilize mucus from the airways in hopes of reducing inflammation and infection. In this issue, Basavaraj[3] provides a concise review of chest physiotherapy in bronchiectasis and the evidence that supports its utilization. He concludes that there is a need for future research in this area.

In the era of precision medicine, immune checkpoint inhibitors (ICI) have dramatically changed the therapeutic landscape for hematologic malignancies and advanced solid tumors, including primary lung cancer. Associated with the increased use of this therapy are immune-related adverse events that can affect any organ system, including the lung, where it manifests as ICI-pneumonitis. The severity of ICI-pneumonitis can range from mild nonspecific symptoms to fatal respiratory failure. In this issue, Puthumana *et al.*[4] review the importance of early recognition and a multidisciplinary approach for diagnosis, treatment, and surveillance. The authors conclude that increased awareness of ICI-pneumonitis is an essential initial step toward more consistent identification and management of this diagnosis.

Positive pressure mechanical ventilation has provided effective life support to millions of patients over the past century; however, safety continues to be an ongoing challenge. In this issue, MacIntyre[5] reviews four "hot topics" with regard to the safety of positive pressure mechanical ventilation: ventilator-induced lung injury, air trapping, patient-ventilator

R. Panettieri is a speaker for AstraZeneca, Sanofi, Merck & Co, a consultant for AstraZeneca, Teva, an advisor for AstraZeneca, Genentech and conducts research for AstraZeneca, Teva, Medimmune, AgoMab, and Janssen. R. Settipane serves as an associate editor of Allergy and Asthma Proceedings, serves as the President of the Eastern Allergy Conference, also serving on the board of directors of the American Association of Certified Allergists; and serves on the speakers' bureau for AstraZeneca, Genentech, Grifols, GSK, Kalvista, Pharming, Regeneron, Sanofi, and Takeda

No external funding sources to report

Journal of Precision Respiratory Medicine (JPRM) is an Open Access journal, which publishes under the CreativeCommons License Deed. In the event the Work is published, the author agrees to and accepts the terms of the Creative Commons License: (Attribution – Non-Commercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0), as well as the Terms and Conditions of Use. Authors retain the copyright privileges to their work in regards to permissions for non-commercial use only, granting OceanSide Publishing, Inc. exclusive license and rights for all "commercial use" regarding the Work and the rights to assign and transfer the rights granted herein. For the purposes of this agreement, "commercial use" means use in any manner that is primarily intended for or directed toward commercial advantage or monetary compensation and in this context includes use of the Work, in whole or in part, alone or in compilations, in all formats and media and by any method, process or device, and through any channels, now known or later developed.

Copyright © 2025, The Author(s). Published by OceanSide Publications, Inc., U.S.A.

asynchronies, and self-inflicted lung injury. The author provides an evidence-based approach to recognizing and managing these issues, supplemented by novel thoughts from the current literature.

In keeping with the *Journal of Precision Respiratory Medicine's* overall mission to distribute timely information with regard to advancements in the knowledge and practice of precision respiratory medicine to clinicians entrusted with patient care, we hope that the articles in this issue will help foster enhanced patient management and outcomes. On behalf of the Editorial Board, we hope you can make practical use of the diversity of literature offered in this issue.

Rey Panettieri, M.D. and
Russell Settipane, M.D.

REFERENCES

1. Nair LG, Katial RK. Biologics and biomarkers. J Precision Respir Med. 2025;8:3–8.
2. Hoag JB, Chan V. Cystic fibrosis in the young and old: the future is precision medicine. J Precision Respir Med. 2025;8:9–14.
3. Basavaraj A. Airway clearance techniques in bronchiectasis. J Precision Respir Med. 2025;8:15–18.
4. Puthumana RM, Vehar SJ, Koch AL. Navigating the waters of immune checkpoint inhibitor pulmonary toxicity. J Precision Respir Med. 2025;8:19–25.
5. Macintyre N. Managing mechanical ventilation: clinical challenges 2024. J Precision Respir Med. 2025;8:26–32. □